

WHAT IS CLAIMED IS:

1. A method of making a balanced self-cleaning singulation saw blade, comprising the step of:

preparing a mandrel or form having contours
5 with the shape of a desired saw blade,
placing the mandrel in a depositing solution
to receive friable particles and a deposited metal binder,
depositing a continuous metal and friable
particle saw blade on the mandrel greater than the desired
10 thickness of the saw blade,
removing the saw blade from the mandrel,
grinding one side of the saw blade to obtain
parallelism and to grind away protruding friable particles.

2. The method as set forth in claim 1 which further includes the step of electro polishing to expose cutting edges, and

masking portions of the saw blade that are
5 not to be electro polished.

3. The method as set forth in claim 2 wherein the step of masking comprises masking the sides and exposing the outside diameter to electro polishing.

4. The method as set forth in claim 3 wherein the step of electro polishing the outside diameter exposes up to fifty percent of the super abrasive particles.

5. The method as set forth in claim 3 wherein the step of masking comprises depositing an anti-friction layer on the sides of the saw blade.

6. The method as set forth in claim 1 wherein the step of depositing a continuous metal and friable particle saw blade comprises electro depositing nickel and

controlled amounts of friable particles while electroplating.
5 ing.

7. The method as set forth in claim 6 wherein the step of electroplating a continuous nickel and friable particle saw blade comprises depositing controlled amounts of large friable particles in the center of the saw blade
5 and small particles on the sides of the saw blade.

8. The method as set forth in claim 6 wherein the step of electroplating a continuous nickel and friable particle saw blade comprises depositing five to 150 micron friable particles.

9. The method as set forth in claim 6 wherein the step of electroplating a continuous nickel and friable particle saw blade comprises depositing 40 micron to 75 micron friable Cubic Boron Nitride (CBN).

10. A method of making a grindable self-adjusting singulation saw for sawing semiconductor packages containing hard and soft metals and plastic, comprising the steps of:

5 depositing binder metal on a form to provide an annular saw blade,

encapsulating in the metal being deposited grindable super abrasive particles softer than natural diamonds to provide a grindable abrasive impregnated metal saw
10 blade,

said grindable super abrasive particles comprising friable synthetic Cubic Boron Nitride (CBN), and/or garnet sapphire, silicon carbide, tungsten carbide, cubic zircon, or the like,

15 grinding one or more sides of the saw blade to balance and true the saw blade, and

removing the annular saw blade from the form ready for use.

11. The method as set forth in claim 10 which further includes the step of balancing and truing the saw blade by electro polishing sides of the annular saw blade to expose grindable particles and super abrasive particles,
5 and

truing the outer diameter to a square balanced shape.

12. The method as set forth in claim 10 wherein the step of depositing metal comprises nickel.

13. The method as set forth in claim 10 which further includes encapsulating a controlled amount of anti-friction particles in the sidewall of the saw blade to create an anti-friction barrier.

14. A grindable self-adjusting singulation saw blade, comprising:

an annular ring of stepped deposited nickel,
said annular ring having about thirty to fifty percent by weight of friable super abrasive particles encapsulated in the deposited nickel,

5 exposed super abrasive particles extending equally from the sides of the nickel saw blade,

one of said sides of said saw blade being ground and polished, and

10 the other side being polished to expose an equal amount of super abrasive particles on both sides.

15. A grindable self-adjusting singulation saw blade as set forth in claim 14 wherein the super abrasive particles are smaller and denser in the sides than in the center.

16. A grindable self-adjusting singulation saw blade as set forth in claim 14 wherein the super abrasive particles in the center of the saw blade are 40 to 150 microns in particle size and become smaller during a sawing operation at the cutting edge.

17. A grindable self-adjusting singulation saw blade as set forth in claim 14 wherein the super abrasive particles comprise synthetic super abrasive softer than natural diamonds and are friable and grindable.

18. A grindable self-adjusting singulation saw blade as set forth in claim 14 wherein the super abrasive particles are soft enough to be ground by a non-diamond grinding wheel.

19. A grindable self-adjusting singulation saw blade as set forth in claim 14 wherein the super abrasive particles are synthetic diamonds or cubic boron nitride that have blocky black micro pyramid structure with crystal defects that permit micro fractures under stress.